

Comprehensive Telecommunication System Engineering Course

Telecom Engineering
Cape Town (South Africa)
13 - 24 Oct 2025

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Comprehensive Telecommunication System Engineering Course

Ref: 3286_138014 **Date:** 13 - 24 Oct 2025 **Location:** Cape Town (South Africa) **Fees:** 5600 Euro

Course Description

This intensive 10-day course provides a comprehensive overview of telecommunication system engineering. Participants will gain in-depth knowledge of network architecture, digital communications, wireless systems, and emerging technologies. The course combines theoretical concepts with practical applications, preparing professionals for the challenges of modern telecommunication systems.

Learning Objectives

- Understand fundamental principles of telecommunication systems and network architecture
- Master digital communication techniques and protocols
- Analyze and design wireless communication systems
- Evaluate emerging technologies and their impact on telecommunication networks
- Develop skills in telecommunication system planning, implementation, and optimization

Course Modules

Day 1: Introduction to Telecommunication Systems

- Overview of telecommunication systems
- Network architecture and topologies
- OSI and TCP/IP models
- Telecommunication standards and regulations

Day 2: Digital Communication Fundamentals

- Analog to digital conversion
- Sampling and quantization
- Digital modulation techniques
- Error detection and correction

Day 3: Transmission Media and Techniques

- Wired transmission: copper and fiber optics
- Wireless transmission: radio and microwave
- Multiplexing techniques
- Channel capacity and noise

A graphic showing a chessboard with several chess pieces (a king, a queen, a rook, and a pawn) and concentric circles emanating from behind them, suggesting signal waves or a network. The text 'UK Training PARTNER' is overlaid on the image.

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Day 4: Network Protocols and Switching

- Circuit switching vs. packet switching
- Internet protocols IP, TCP, UDP
- Routing algorithms and protocols
- Quality of Service QoS mechanisms

Day 5: Wireless Communication Systems

- Cellular network architecture
- Mobile communication standards 2G, 3G, 4G, 5G
- Wireless LAN and Bluetooth technologies
- Satellite communication systems

Day 6: Optical Communication Systems

- Fiber optic communication principles
- Optical network architectures
- Wavelength Division Multiplexing WDM
- Optical switching and routing

Day 7: Network Security and Encryption

- Cryptography fundamentals
- Public Key Infrastructure PKI
- Virtual Private Networks VPNs
- Network security protocols and firewalls

Day 8: Emerging Technologies in Telecommunications

- Internet of Things IoT and M2M communications
- Software-Defined Networking SDN
- Network Function Virtualization NFV
- Edge computing and 5G applications

Day 9: Telecommunication System Planning and Design

- Network capacity planning
- Traffic engineering and modeling
- Reliability and redundancy considerations
- Cost optimization strategies

Day 10: Future Trends and Case Studies

- 6G and beyond: future of wireless communications
- Quantum communication and cryptography
- Green telecommunications

A graphic of a chessboard with several chess pieces (king, queen, rook, knight, and pawns) in gold and silver. The text 'UK Training PARTNER' is overlaid on the board.

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- Real-world case studies and best practices

Practical Wins for Participants

- Ability to design and optimize telecommunication networks for various applications
- Skills to evaluate and implement emerging technologies in existing systems
- Expertise in troubleshooting complex telecommunication issues
- Knowledge to make informed decisions on telecommunication infrastructure investments

A graphic of a chessboard with several chess pieces (a king, a queen, and a pawn) on it, set against a background of concentric circles.

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www.blackbird-training.com



training@blackbird-training.com



+44 7480 775526 / +44 7401 177335